

A new Proteocephalidean tapeworm, *Gangesia (Gangesia) pentakalis* n.sp. from fresh water cat fish, *Wallago attu* at Pentakali Dam, Dist, Buldhana (M.S.), India

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Abstract

The present communication deals with the Proteocephalidean tapeworm *Gangesia (Gangesia) pentakalis* n.sp. from *Wallago attu* at Pentakali Dam, Dist, Buldhana. The worms comes closer to all the known species of this genus scolex globular, rostellar hooks 35 – 47 in number, mature segment broader than long, testes 170 – 190 in number, ovary butterfly shaped, vitellaria follicular.

Keywords: Proteocephalidean tapeworm, *Wallago attu*, Pentakali dam.

INTRODUCTION

The genus *Gangesia* was erected by Woodland in 1924. The description of *Gangesia* by Southwell [20] was very meager and Verma [22] gave a fresh account of the form. In the same paper Verma also described *G. pseudotropii* from *Silurus gangia* and *G. agraensis* from *Wallago attu*. Southwell [21] however recognized only four valid species of the genus, others being regarded as synonyms and *G. parasiuri* was reported by Yamaguti [26]. Later on Wardle McLeod [25] accepted Verma's *G. pseudotropii* which is proposed as new genus Vermaia by Nybelin [14] but later Dhar and Fotedar [2] added on more species and given a revised diagnosis of the genus *Gangesia* and proposed to divide genus *Gangesia* Woodland [25] into two sub-genera i.e. *Gangesia (Gangesia)*, *Gangesia (Vermaia)*.

Gangesia (Gangesia) have genital pores irregularly alternating, neck and strobila without spines, rostellum with single or double row of hooks and testes in one field; *Gangesia (Vermaia)* have genital pores regularly alternating, neck and strobila with spine, rostellum with single crown of hooks and testes in single or double field. The species reported by Fotedar and Dhar [3], *G. jamunesis* and *G. kashmiresnsis* are placed in sub genus Vermaia and *Gangesia* respectively. They further pointed out that in *G. pogpnchis* and *G. polyonchis* [4] are referred to be the subgenus Vermaia. Dhar *et al.*, [2] were not including *Gangesia sindensis*, Rchana and Bilgue [16] in their list. Later Malhotra added *G. sonechensis* and *G.mehanadabadensis* [12,13] respectively. Malhotra *et al.*, [12] have upheld the synonymy of *G. lucknowai* [19], with *G. bengalensis* Southwell [20] as discussed earlier by Rai [17]. But later Seth and Capoor [1] have accommodated *G. polygonchis* and *G. oligonchis* previously kept in subgenus Vermaia by Dhar *et al.*, [2] and erected a new subgenus frezia. Later on many species have been added by

different authors in the genus *Gangesia (Gangesia)* are as follows.

All the above authors have not considered the subgenus *Gangesia (Gangesia)* and later suggested by Dhar and Fotedar [2], but the literature show that there are no spines on scolex and strobila, genital pores irregularly alternating, hence above species should be placed in the subgenus *Gangesia*.

The present communication deals with the *Gangesia (Gangesia)* a new species from the freshwater catfish *Wallago attu* (Bloch).

MATERIALS AND METHODS

Seven cestodes parasites were collected from the intestine of a fresh water fish, *Wallago attu* (Bloch) from Pentakali Dam, Dist, Buldhana (M.S) India in the month of October, 2022. The worms were collected, washed with saline water, flattened and preserved in 4% formalin, the parasites were stained with Harris haematoxylin passed through various alcoholic grades, cleared in xylol, mounted in D.P.X. and whole mount slides were prepared, for further anatomical studies. Sketches are drawn with the help of Camera Lucida and all measurements were taken in millimeters unless or otherwise stated. The identification is made with the help of Systema Helminthum [26].

Description

Length of the body upto 76, the scolex is globular in shape, broader at the anterior, middle and posterior side, distinctly marked off from the proglottids, muscular and measures, 0.28-0.35 long by 0.3155-0.7038 wide. Scolex consist of four suckers these are very big. Round to oval in shape, muscular and overlapping on each other, measures 0.3689-0.3786 mm in length and 0.007-0.218 in breadth. Rostellum with a double row of stout hooks, and measures 0.379 - 0.398 in length and 0.0097.-0.243 in breadth. The rostellar hooks are rose-thorn-shape 35-47 in number, very stout and have a single pointed spine or prong and measures 0.0097-0.107 in length and 0.010-0.024 in breadth. Neck is absent, proglottids starts immediately after the scolex.

The mature proglottids broader than long, and measures 0.530-0.644 in length and 1.136-1.174 in breadth. The testes are 170-190 in number, oval in shape, small in size, pre ovarian, scattered throughout the anterior part of the proglottid, except in cirrus pouch region and measures 0.030-0.045 in length and 0.023-0.030 in breadth. Cirrus pouch is large, elongated; fusiform in shape,

Received: January 05, 2023; Revised March 19, 2023; Accepted August 20, 2023.

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obliquely and measures 0.288 - 0.303 in length and 0.030-0.98 in breadth. The cirrus is thin, slightly curved in the cirrus pouch and measures 0.242 - 0.258 mm in length and 0.015 -0.023 in breadth. The vas deferens is long, thin tube, starts from cirrus extends up to the middle of the proglottids and measures 0.303.-0.326 mm in length and 0.008 -0.015 in breadth.

The ovary is distinctly bilobed; butterfly shaped, placed at the posterior margin of the proglottids and extends laterally up to the vitellaria. Each lobe is broad and ovarian margins irregular and measures 1.022-1.045 in length and 0.152-0.227 in breadth. The vagina is a thin tube posterior to cirrus pouch, enlarges at the genital pore, runs along with margin of cirrus pouch, take a curve and run posterior, reaches and opens in to an ootype and measures 0.742-0.758 mm in length and 0.008-0.045 in breadth. Ootype is rounded, big and present at the centre of the two ovarian and measures 0.205 in diameter. The genital pore is irregularly alternate, oval in shape, marginal at the centre of the lateral margin of proglottids and measures 0.106-0.136 mm in length and 0.015-0.038 mm in breadth. The uterus is a sac like, occupying the vertical portion of the central medulla and measures 0.477-0.500 in length and 0.23 -0.091 in breadth.

The vitellaria are follicular, round in shape, arranged in double rows, distributed along the lateral margin and occupies nearly 0.015 – 0.023 in portion of each lateral side of the proglottids.

DISCUSSION

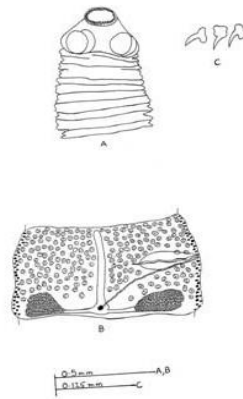
The new species *Gangesia (Gangesia) pentakalis* n.sp. comes closer to species of the subgenus *Gangesia* Viz. *G. macrons*, *G. parasiluri*, *G. lucknowia*, *G. kashmirensis*, *G. mehamdabadensis*, *G. haryanae*, *G. sonhensis*, *G. indica*, *G. hanumanthai*, *G. paithanensis*, *G. maharashtrii*, *G. dharurensis*, *G. seenghali*, *G. clariusae*, *G. rohita*, *G. (G.) mastacembli*. However, the new species differs from *G. macrons* [25] in the number of rostellar hooks (35-47 as against 33), in the number of testes (170 -190 Vs. 100), vas deferens continues inside the cirrus pouch, in the shape of ovary butterfly as against compact and uterus without diverticulae. The present worm differs from *G. Lucknowia* [19] in the number of testes (170-190 as against 130-150), uterus without diverticulae and in the shape of ovary (butterfly shaped as against squarish). The present worm differs from *G. kashmirensis* [2] in the number of rostellar hooks (35-47 as against 30), in the number of testes (170-190 as against less than 200). The present worm from *G. sonhensis* [12] sucker without spines, absence of neck, in the number of testes (170 -190 as against 112 – 184), vas deferens coiled and in the shape of uterus (sac like as against with diverticulae). The present worm differs from *G. mehamdabadensis* [13] having smaller scolex, in the number of rostellar hooks (35-47 as against 66 in numbers). The present worm from *G. haryanae* [5] in number of rostellar hooks (35-47 as against 20), in the number of testes (170-190 as against 200) and uterus without diverticulae. The present worm from *G. indica* [6] in the rostellar hooks (35-47 vs. 24-26), in the uterus (sac like vs. 18-20 diverticulae). The present worm from *G. hanumanthai* [1] in the

shape of scolex (globular as against round to oval), in the number of testes (170-190 as against 45- 47, 48). The present worm from *G. paithanensis* [10] in the shape of scolex (globular as against oval), in the number of hooks (35-47 as against 11 – 13), in the shape of hooks (dagger with broad base as against rod shaped), in the number of testes (170-190 as against 280 -300) and position of vagina (posterior as against anterior). The present worm from *G. aurangabadensis* [18] were the scolex is oval in shape, number of rostellar hooks (35-47 as against 48), in number of testes (170-190 as against 350-360), ovary bilobed and compact, uterus tube like long. The present worm from *G. sumani* [18] were the scolex is triangular in shape, testes (170-190 as against 103) in number, ovary bilobed with 4-6 acini. The present worm from *G. maharashtrii* [7] having scolex (globular vs. triangular). In the absence of neck, in the number of rostellar hooks (35-47 as against 40-45) in the number of testes (170-190 as against 170-185). The present worm from *G. dharurensis* [9] in the absence of neck, in the number of rostellar hooks (35-47 as against 35-40), in the number of testes (170-190 as against 60-70), in the shape of ovary (butterfly shaped as against bilobed compact) and uterus without diverticulae. The present worm from *G. seenghali* [8], in the number of rostellar hooks (35-47 as against 36-38), in the number of testes (170-190 as against 220-230), in the shape of ovary (butterfly shape as against bilobed, compact), in the w shape of uterus (sac as against tubular with diverticulae, 18-19). The present worm from *G. clariusae* [11] in the shape of the scolex is triangular, hooks long nail like (35-47 as against 17-20), testes is rounded to oval (170-190 as against 85-90 in number), ovary is bilobed, long finger like lobes. The present worm from *G. rohita* [14] were the scolex with rostellum hooks, (35-47 as against 30-32) in numbers, neck short, testes 170-190 as against 145-155 in numbers, ovary large bilobed. The present worm from *G. mastacembli* [23] were the scolex is triangular in shape with four oval suckers. Hooks broader at the base and tapering at the end, testes (170-190 as against 170-190) in number, ovary bilobed with 4-6 acini, uterus tubular, long, extends up to the anterior end of segment.

These distinct characters are more than enough to erect a new species from this genus and hence the name *Gangesia pentakalis* n.sp is proposed as it is reported from Pentakali Dam, Dist, Buldhana (MS) India.

Taxonomic summary

Genus	: <i>Gangesia</i> WooPdland, 1924
Species	: <i>Gangesia (Gangesia) pentakalis</i> n.sp.
Type host	: <i>Wallago attu</i> (Bloch)
Habitat	: Intestine
Type locality	: Pentakali Dam, Dist, Buldhana
Accession No	: HRL /2022-23/1-10.
Holotype	: Deposited in Helminthology Research Lab.
Para type	: Dept. of Zoology,
Etymology	: As the cestode species reported from Pentakali Dam, Dist, Buldhana



Key to the species of the genus *Gangesia*, Woodland, 1924

- | | |
|-------------------------------|--------------------------------|
| Present of neck | 1 |
| Absent of neck | 2 |
| 1) Uterus tubular | 3 |
| Uterus sac like | 4 |
| Uterus with 10-20 diverticula | 5 |
| Uterus with 20-30 diverticula | <i>G. haryanaei</i> [5] |
| 2) Rostellar hooks 11-12 | <i>G. paithanensis</i> [10] |
| Rostellar hooks 18 | <i>G. mastacembali</i> [23] |
| Rostellar hooks 24 – 26 | <i>G. indica</i> [6] |
| Rostellar hooks 30 | <i>G. kashmirensis</i> [2] |
| Rostellar hooks 30 -50 | 6 |
| Rostellar hooks 66 | <i>G. mehamdabadensis</i> [13] |
| 3) Testes 103 | <i>G. sumani</i> [18] |
| Testes 350 -360 | <i>G. aurangabadensis</i> [18] |
| 4) Scolex oval in shape | <i>G. rohita</i> , [14] |
| Scolex globular in shape | <i>G. dharurensis</i> , [9] |
| Scolex triangular | <i>G. clariusae</i> [11] |
| 5) Testes 45 -75 | <i>G. hanumanthai</i> [1] |
| Testes 130 -150 | <i>G. lucknowia</i> [19] |
| Testes 100 – 120 | <i>G. sonhensis</i> [12] |
| 6) Scolex globular | <i>G. sengkhal</i> [8] |
| Scolex broader in middle | <i>G. macrons</i> [25] |
| Scolex triangular | <i>G. maharashtri</i> [7] |

ACKNOWLEDGEMENT

The author is very much thankful to the Head, Department of Zoology, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (M.S.) India for providing the laboratory facilities during this work.

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